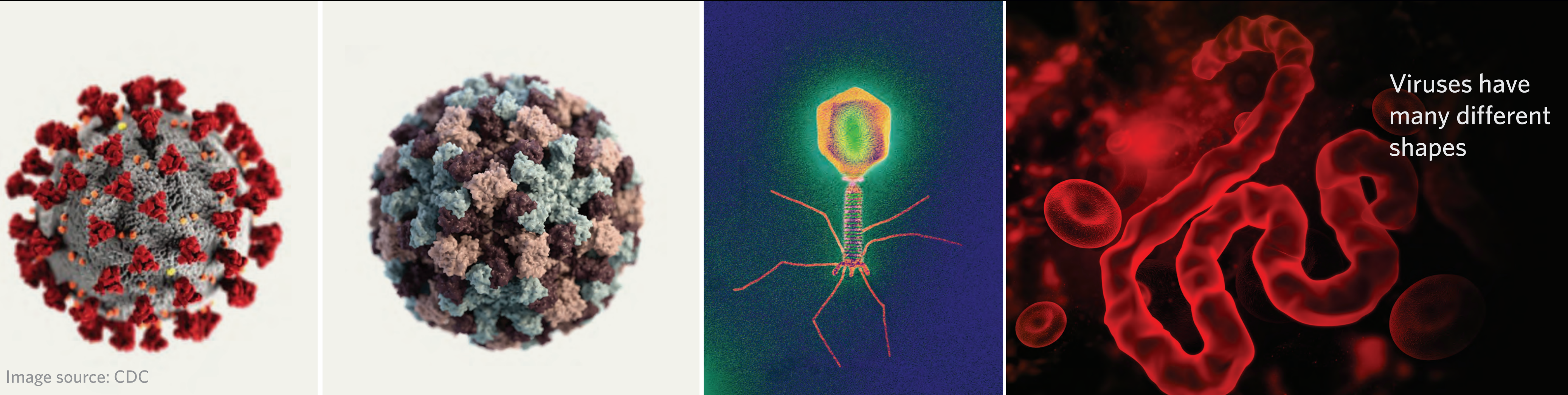


# What Does a Virus Do?

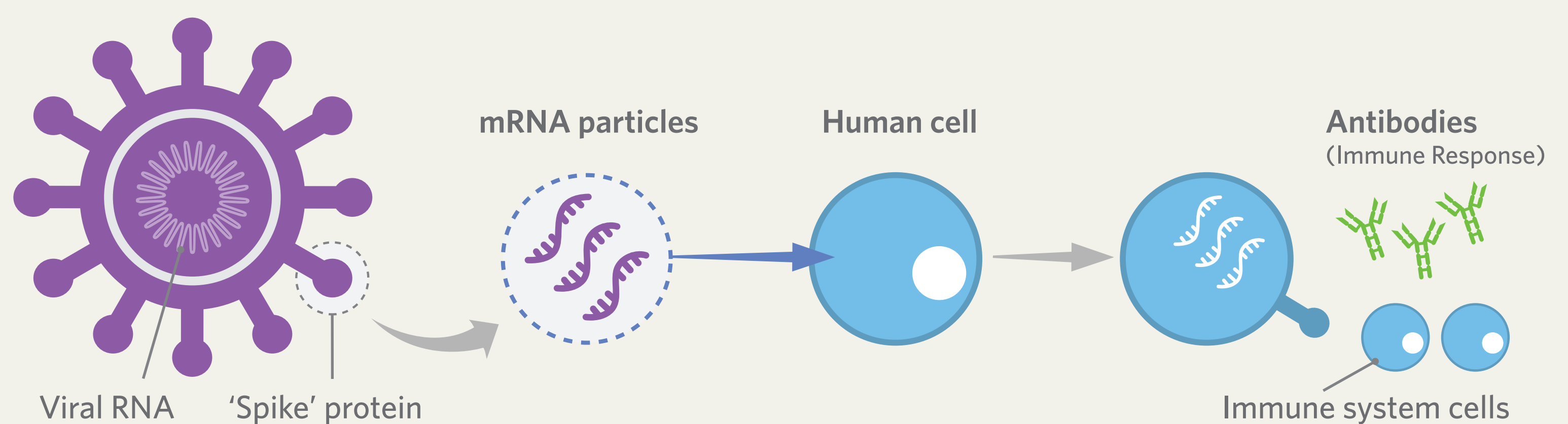
Viruses are particles that can cause many different types of diseases in plants and animals. Unlike bacteria, viruses cannot survive on their own. They need a host to survive. Viruses can only reproduce inside cells. To reproduce, a virus attaches itself to the cell membrane of a host cell. Inside the cell, the genetic material causes the host cell to produce the necessary components to make new viruses. The new viruses are released from the host cell.



# What Do Vaccines Do in Our Bodies?

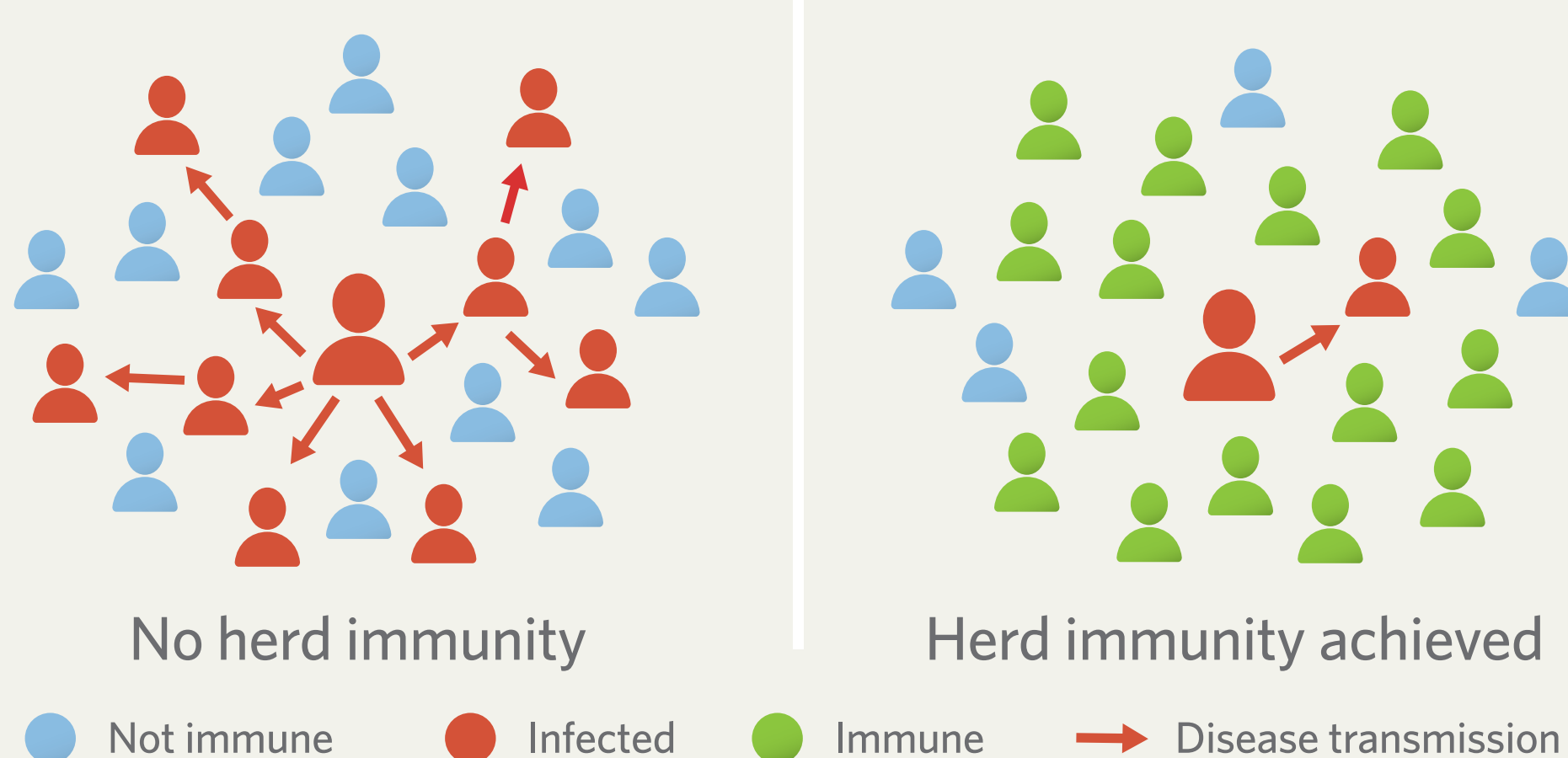
Vaccines trick the body into acting like it has been invaded by a virus, which causes your body to create antibodies to recognize and fight the virus. Every cell has instructions inside for making copies of itself. Inside the virus, messenger RNA (mRNA) carries those instructions. To make the vaccine for COVID-19, scientists took the instructions for making the "spike" protein from a live virus. Your cells read those mRNA instructions and start making that spike protein. Your immune system then sees this new spike protein and creates antibodies that will be ready to attack if you come into contact with the virus. Unlike other vaccines, there is no whole virus used in the COVID-19 vaccine, so you can't get the disease from it.

## How the COVID-19 mRNA Vaccine Works



# What is Herd Immunity?

The goal of immunizations is to achieve herd immunity, which prevents the disease from spreading as easily. When a disease outbreak occurs for the first time, no one is immune. That is what happened around the world with COVID-19. And, because it was a new disease, there was no vaccine. Once a person has had the disease or has been vaccinated, they usually become immune. Scientists estimate that for COVID-19, 60%-75% of people need to be immune for herd immunity.



Source: GAO adaptation of NIH graphic

